

# SEQUENCE LISTING

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<120> PROTEIN

<130> 100084.415US

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<150> PCT/GB99/03631

<151> 1999-11-02

<150> GB 9823975.9

<151> 1998-11-02

<160> 26

<170> PatentIn Ver. 2.1

<210> 1

<211> 23

<212> PRT

<213> Streptococcus pyogenes

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Thr Asn Cys

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<212> PRT

<213> Streptococcus pyogenes

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Leu	Thr	Asn	Leu	Leu	Gly	Asn	Ala	Pro	Glu	Lys	Leu	Ala	Leu	Arg	Asn
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20	25	30
Glu Glu Arg Ala Ile Asp Glu Leu Lys Lys Gln Ala Ile Glu Asp Lys		
35	40	45
Glu Ala Thr Thr Ala Ile Glu Ala Ala Ser Ser Asp Ala Leu Glu Ala		
50	55	60
Leu Ala Asp Gln Thr Asp Ala Leu Gln Ser Glu Glu Ala Ala Val Val		
65	70	75 80
Lys Ala Asp Asn Ala Ala Ser Asp Ala Leu Glu Ala Leu Ala Asp Gln		
85	90	95
Thr Asp Ala Leu Gln Ser Glu Glu Ala Glu Val Val Gln Ser Asp Asn		
100	105	110
Ala Ala Ser Asp Ala Trp Glu Lys Ala Ala Thr Pro Ile Ala Leu Asp		
115	120	125

Val Lys Lys Thr Lys Asp Thr Lys Pro Val Val Lys Lys Glu Glu Arg  
 130 135 140

Gln Asn Val Asn Thr Leu Pro Thr Thr Gly Glu Glu Ser Asn Pro Phe  
 145 150 155 160

Phe Thr Ala Ala Ala Leu Ala Ile Met Val Ser Thr Gly Val Leu Val  
 165 170 175

Val Ser Ser Lys Cys Lys Glu Asn  
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<210> 5

<211> 141

<212> PRT

<213> Streptococcus pyogenes

<400> 5

Val Asp Ser Pro Ile Glu Gln Pro Arg Ile Ile Pro Asn Gly Gly Thr  
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 20 25 30

Glu Glu Arg Ala Ile Asp Glu Leu Lys Lys Gln Ala Ile Glu Asp Lys  
 35 40 45

Glu Ala Thr Thr Ala Ile Glu Ala Ala Ser Ser Asp Ala Leu Glu Ala  
 50 55 60

Leu Ala Asp Gln Thr Asp Ala Leu Gln Ser Glu Glu Ala Ala Val Val  
 65 70 75 80

Lys Ala Asp Asn Ala Ala Ser Asp Ala Leu Glu Ala Leu Ala Asp Gln  
 85 90 95

Thr Asp Ala Leu Gln Ser Glu Glu Ala Glu Val Val Gln Ser Asp Asn  
 100 105 110

Ala Ala Ser Asp Ala Trp Glu Lys Ala Ala Thr Pro Ile Ala Leu Asp  
 115 120 125

Val Lys Lys Thr Lys Asp Thr Lys Pro Val Val Lys Lys  
 130 135 140

<210> 6  
 <211> 159  
 <212> PRT  
 <213> Streptococcus pyogenes

<400> 6  
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 Leu Thr Asn Leu Leu Gly Asn Ala Pro Glu Lys Leu Ala Leu Arg Asn  
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 Glu Glu Arg Ala Ile Asp Glu Leu Lys Lys Gln Ala Ile Glu Asp Lys  
 35 40 45  
 Glu Ala Thr Thr Ala Ile Glu Ala Ala Ser Ser Asp Ala Leu Glu Ala  
 50 55 60  
 Leu Ala Asp Gln Thr Asp Ala Leu Gln Ser Glu Glu Ala Ala Val Val  
 65 70 75 80  
 Lys Ala Asp Asn Ala Ala Ser Asp Ala Leu Glu Ala Leu Ala Asp Gln  
 85 90 95  
 Thr Asp Ala Leu Gln Ser Glu Glu Ala Glu Val Val Gln Ser Asp Asn  
 100 105 110  
 Ala Ala Ser Asp Ala Trp Glu Lys Ala Ala Thr Pro Ile Ala Leu Asp  
 115 120 125  
 Val Lys Lys Thr Lys Asp Thr Lys Pro Val Val Lys Lys Glu Glu Arg  
 130 135 140  
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 145 150 155

<210> 7  
 <211> 217  
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 <213> Streptococcus pyogenes

<400> 7  
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 20 25 30

Ala Val Asp Ser Pro Ile Glu Gln Pro Arg Ile Ile Pro Asn Gly Gly  
35 40 45

Thr Leu Thr Asn Leu Leu Gly Asn Ala Pro Glu Lys Leu Ala Leu Arg  
50 55 60

Asn Glu Glu Arg Ala Ile Asp Glu Leu Lys Lys Gln Ala Ile Glu Asp  
65 70 75 80

Lys Glu Ala Thr Thr Ala Ile Glu Ala Ala Ser Ser Asp Ala Leu Glu  
85 90 95

Ala Leu Ala Asp Gln Thr Asp Ala Leu Gln Ser Glu Glu Ala Ala Val  
100 105 110

Val Lys Ala Asp Asn Ala Ala Ser Asp Ala Leu Glu Ala Leu Ala Asp  
115 120 125

Gln Thr Asp Ala Leu Gln Ser Glu Glu Ala Glu Val Val Gln Ser Asp  
130 135 140

Asn Ala Ala Ser Asp Ala Trp Glu Lys Ala Ala Thr Pro Ile Ala Leu  
145 150 155 160

Asp Val Lys Lys Thr Lys Asp Thr Lys Pro Val Val Lys Lys Glu Glu  
165 170 175

Arg Gln Asn Val Asn Thr Leu Pro Thr Thr Gly Glu Glu Ser Asn Pro  
180 185 190

Phe Phe Thr Ala Ala Ala Leu Ala Ile Met Val Ser Thr Gly Val Leu  
195 200 205

Val Val Ser Ser Lys Cys Lys Glu Asn  
210 215

<210> 8

<211> 259

<212> PRT

<213> Streptococcus pyogenes

<400> 8

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Thr Val Ser Ala Val Asp Ser Pro Ile Glu Gln Pro Arg Ile Ile Pro

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35										40										45																			
Ala	Leu	Arg	Asn	Glu	Glu	Arg	Ala	Ile	Asp	Glu	Leu	Lys	Lys	Gln	Ala																								
50										55										60																			
Ile	Glu	Asp	Lys	Glu	Ala	Thr	Thr	Ala	Ile	Glu	Ala	Ala	Ser	Ser	Asp																								
65										70										75										80									
Ala	Leu	Glu	Ala	Leu	Ala	Asp	Gln	Ala	Asp	Ala	Leu	Gln	Ser	Glu	Glu																								
85										90										95																			
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100										105										110																			
Leu	Ala	Asp	Gln	Thr	Asp	Ala	Leu	Gln	Ser	Glu	Glu	Ala	Ala	Val	Val																								
115										120										125																			
Lys	Ala	Asp	Asn	Ala	Ala	Ser	Asp	Thr	Leu	Glu	Ala	Leu	Ala	Asp	Gln																								
130										135										140																			
Thr	Asp	Ala	Leu	Gln	Ser	Glu	Glu	Ala	Ala	Val	Val	Lys	Ala	Asp	Asn																								
145										150										155										160									
Ala	Ala	Ser	Asp	Thr	Leu	Glu	Ala	Leu	Ala	Asp	Gln	Thr	Asp	Ala	Leu																								
165										170										175																			
Gln	Ser	Glu	Glu	Ala	Ala	Val	Val	Lys	Ala	Asp	Asn	Ala	Ala	Ser	Asp																								
180										185										190																			
Thr	Leu	Glu	Ala	Leu	Ala	Asp	Gln	Thr	Asp	Ala	Leu	Gln	Ser	Glu	Glu																								
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Ala	Glu	Val	Val	Gln	Ser	Asp	Asn	Ala	Ala	Ser	Asp	Ala	Trp	Gly	Lys																								
210										215										220																			
Ala	Ala	Thr	Pro	Ile	Ala	Leu	Asp	Val	Lys	Lys	Thr	Lys	Asp	Thr	Lys																								
225										230										235										240									
Pro	Val	Val	Lys	Lys	Glu	Glu	Arg	Gln	Asn	Val	Asn	Thr	Leu	Pro	Thr																								
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<210> 9  
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 <213> Streptococcus pyogenes

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 20 25 30  
 Glu Arg Ala Ile Asp Glu Leu Lys Lys Gln Ala Ile Glu Asp Lys Glu  
 35 40 45  
 Ala Thr Thr Ala Ile Glu Ala Ala Ser Ser Asp Ala Leu Glu Ala Leu  
 50 55 60  
 Ala Asp Gln Thr Asp Ala Leu Gln Ser Glu Glu Ala Ala Val Val Lys  
 65 70 75 80  
 Ala Asp Asn Ala Ala Ser Asp Ala Leu Glu Ala Leu Ala Asp Gln Thr  
 85 90 95  
 Asp Ala Leu Gln Ser Glu Glu Ala Glu Val Val Gln Ser Asp Asn Ala  
 100 105 110  
 Ala Ser Asp Ala Trp Glu Lys Ala Ala Thr Pro Ile Ala Leu Asp Val  
 115 120 125  
 Lys Lys Thr Lys Asp Thr Lys Pro Val Val Lys Lys Glu Glu Arg Gln  
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 Asn Val Asn Thr Leu Pro Thr Thr Gly Glu Glu  
 145 150 155

<210> 10  
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 <213> Streptococcus pyogenes

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Leu Arg Asn Glu Glu Arg Ala Ile Asp Glu Leu Lys Lys Gln Ala Ile  
 35 40 45  
 Glu Asp Lys Glu Ala Thr Thr Ala Ile Glu Ala Ala Ser Ser Asp Ala  
 50 55 60  
 Leu Glu Ala Leu Ala Asp Gln Ala Asp Ala Leu Gln Ser Glu Glu Ala  
 65 70 75 80  
 Ala Val Val Gln Ser Asp Asn Ala Ala Ser Asp Ala Leu Glu Ala Leu  
 85 90 95  
 Ala Asp Gln Ala Asp Ala Leu Gln Ser Glu Glu Ala Ala Val Val Gln  
 100 105 110  
 Ser Asp Asn Ala Ala Gly Asp Ala Leu Glu Ala Leu Ala Asp Gln Thr  
 115 120 125  
 Asp Ala Leu Gln Ser Glu Glu Ala Ser Val Val Lys Ala Asp Asn Ala  
 130 135 140  
 Ala Ser Asp Ala Leu Glu Ala Leu Ala Asp Gln Thr Asp Ala Leu Gln  
 145 150 155 160  
 Ser Glu Glu Ala Ser Val Val Lys Ala Asp Asn Ala Ala Ser Asp Ala  
 165 170 175  
 Leu Glu Ala Leu Ala Asp Gln Thr Asp Ala Leu Gln Ser Glu Glu Ala  
 180 185 190  
 Ala Val Val Lys Ala Asp Asn Ala Ala Ser Asp Ala Leu Glu Ala Leu  
 195 200 205  
 Ala Asp Gln Thr Asp Ala Leu Gln Ser Glu Glu Ala Glu Val Val Gln  
 210 215 220  
 Ser Asp Asn Ala Ala Ser Asp Ala Trp Glu Lys Ala Ala Thr Pro Ile  
 225 230 235 240  
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 260 265 270

<210> 11



<211> 167  
 <212> PRT  
 <213> Streptococcus pyogenes

<400> 11

Ala Ser Val Leu Val Gly Ser Thr Val Ser Ala Val Asp Ser Pro Ile  
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Glu Gln Pro Arg Ile Ile Pro Asn Gly Gly Thr Leu Thr Asn Leu Leu  
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Gly Asn Ala Pro Glu Lys Leu Ala Leu Arg Asn Glu Glu Arg Ala Ile  
 35 40 45

Asp Glu Leu Lys Lys Gln Ala Ile Glu Asp Lys Glu Ala Thr Thr Ala  
 50 55 60

Ile Glu Ala Ala Ser Ser Asp Ala Leu Glu Ala Leu Ala Asp Gln Thr  
 65 70 75 80

Asp Ala Leu Gln Ser Glu Glu Ala Ala Val Val Lys Ala Asp Asn Ala  
 85 90 95

Ala Ser Asp Ala Leu Glu Ala Leu Ala Asp Gln Thr Asp Ala Leu Gln  
 100 105 110

Ser Glu Glu Ala Glu Val Val Gln Ser Asp Asn Ala Ala Ser Asp Ala  
 115 120 125

Trp Glu Lys Ala Ala Thr Pro Ile Ala Leu Asp Val Lys Lys Thr Lys  
 130 135 140

Asp Thr Lys Pro Val Val Lys Lys Glu Glu Arg Gln Asn Val Asn Thr  
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Leu Pro Thr Thr Gly Glu Glu  
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<210> 12  
 <211> 654  
 <212> DNA  
 <213> Streptococcus pyogenes

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 cctcgaatta ttccaaatgg cggaacctta actaatcttc ttggcaatgc tccagaaaaa 180

ctggcattac gtaatgaaga aagagccatt gatgaattaa aaaaacaagc tattgaggat 240  
aaagaagcta cgacagctat agaagcagca agttcagatg ccttagaagc attagcggat 300  
caaacagacg ctttacaatc agaagaagct gcggttggtta aagcggataa cgctgctagt 360  
gacgccttag aagcattggc ggatcaaaca gacgctttac aatcagaaga agctgaagta 420  
gttcaatcag ataacgctgc tagtgacgcc tgggaaaaag cagcaactcc aatcgcttta 480  
gatgttaaga aaactaaaga tacaaaacct gtagttaaaa aagaagaaag acaaaacggt 540  
aatacccttc ctacaactgg tgaagagtct aaccatttct ttacagctgc tgcgcttgca 600  
ataatggtaa gtacaggtgt gttagttgta agttcaaagt gcaaagaaaa ttag 654

<210> 13

<211> 777

<212> DNA

<213> Streptococcus pyogenes

<400> 13

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gttgactcac ctatcgaaca gcctcgaatt attccaaatg gcggaacctt aactaatctt 120  
cttggcaatg ctccagaaaa actggcatta cgtaatgaag aaagggccat tgatgaatta 180  
aaaaaacaag ctattgagga taaagaagct acgacagcta tagaagcagc aagttcagat 240  
gccttagaag cattagcggg tcaagcagac gctttacaat cagaagaagc tgcagtagtt 300  
caatcagata acgctgctag tgacgcctta gaagcattgg cggatcaaac agacgcttta 360  
caatcagaag aagctgcggt tgttaaagcg gataacgctg ctagtgacac tttagaagca 420  
ttggcggatc aaacagacgc tttacaatca gaagaagctg cggttgttaa agcggataac 480  
gctgctagtg acactttaga agcattggcg gatcaaacag acgctttaca atcagaagaa 540  
gctgcggttg ttaaagcggg taacgctgct agtgacactt tagaagcatt ggcggatcaa 600  
acagacgctt tacaatcaga agaagctgaa gtagttcaat cagataacgc tgctagtgc 660  
gcctggggaa aagcagcaac tccaatcgct ttagatgtta agaaaactaa agatacaaaa 720  
cctgtagtta aaaaagaaga aagacaaaac gttaataccc ttcctacaac tggtgaa 777

<210> 14

<211> 469

<212> DNA

<213> Streptococcus pyogenes

<400> 14

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aaacaagcta ttgaggataa ggaagctacg acagctatag aagcagcaag ttcagatgcc 180  
ttagaagcat tagcggatca aacagacgct ttacaatcag aagaagctgc ggttggttaa 240  
gcggataacg ctgctagtga cgcttagaa gcattggcgg atcaaacaga cgctttacaa 300  
tcagaagaag ctgaagtagt tcaatcagat aacgctgcta gtgacgctg ggaaaaagca 360  
gcaactccaa tcgctttaga tggttaagaaa actaaagata caaacctgt agttaaaaaa 420  
gaagaaagac aaaacgttaa tacccttcct acaactggtg aagagtaac 469

<210> 15

<211> 853  
<212> DNA  
<213> Streptococcus pyogenes

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gaaaaactgg cattacgtaa tgaagaaaga gccattgatg aattaaaaaa acaagctatt 180  
gaggataaag aagctacgac agctatagaa gcagcaagtt cagatgcctt agaagcatta 240  
gcggtatcaag cagacgcttt acaatcagaa gaagctgcag tagttcaatc agataacgct 300  
gctagtgcag ccttagaagc attagcggat caagcagacg ctttacaatc agaagaagct 360  
gcagtagttc aatcagataa cgctgctggt gacgccttag aagcattggc ggatcaaaca 420  
gacgctttac aatcagaaga agcttcggtt gttaaagcgg ataacgctgc tagtgacgcc 480  
ttagaagcat tggcggtatc aacagacgct ttacaatcag aagaagcttc gggtgttaaa 540  
gcggtataac ctgctagtga cgccttagaa gcattggcgg atcaaacaga cgctttacaa 600  
tcagaagaag ctgcggttgt taaagcggat aacgctgcta gtgacgcctt agaagcattg 660  
gcggtatcaa cagacgcttt acaatcagaa gaagctgaag tagttcaatc agataacgct 720  
gctagtgcag cctgggaaaa agcagcaact ccaatcgctt tagatgttaa gaaaactaaa 780  
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ggtgaagagt aac 853

<210> 16  
<211> 504  
<212> DNA  
<213> Streptococcus pyogenes

<400> 16  
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attattccaa atggcggaac cttaactaat cttcttggca atgctccaga aaaactggca 120  
ttacgtaatg aagaaagagc cattgatgaa ttaaaaaaac aagctattga ggataaagaa 180  
gctacgacag ctatagaagc agcaagttca gatgccttag aagcattagc ggatcaaaca 240  
gacgctttac aatcagaaga agctgcggtt gttaaagcgg ataacgctgc tagtgacgcc 300  
ttagaagcat tggcggtatc aacagacgct ttacaatcag aagaagctga agtagttcaa 360  
tcagataacg ctgctagtga cgcctgggaa aaagcagcaa ctccaatcgc tttagatggt 420  
aagaaaacta aagatacaaa acctgtagtt aaaaaagaag aaagacaaaa cgttaatacc 480  
cttcctacaa ctggtgaaga gtaa 504

<210> 17  
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<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 17

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24

<210> 18

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

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<210> 19

<211> 25

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer

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<210> 20

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

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32

<210> 21

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

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<210> 22

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<212> PRT

<213> Streptococcus pyogenes

<400> 22

Asp	Ser	Pro	Ile	Glu	Gln	Pro	Arg	Ile	Ile	Pro	Asn	Gly	Gly	Thr	Leu
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Thr Asn Cys

<210> 23

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<212> PRT

<213> Streptococcus pyogenes

<400> 23

Glu	Lys	Leu	Ala	Leu	Arg	Asn	Glu	Glu	Arg	Ala	Ile	Asp	Glu	Leu	Lys
1				5					10					15	

Lys	Gln	Ala	Ile	Glu	Asp	Lys	Glu	Cys
			20					25

<210> 24

<211> 19

<212> PRT

<213> Streptococcus pyogenes

<400> 24

Glu	Lys	Leu	Ala	Leu	Arg	Asn	Glu	Glu	Arg	Ala	Ile	Asp	Glu	Leu	Lys
1				5					10					15	

Lys Gln Cys

<210> 25

<211> 18

<212> PRT

<213> Streptococcus pyogenes

<400> 25

Glu Glu Arg Ala Ile Asp Glu Leu Lys Lys Gln Ala Ile Glu Asp Lys  
 1 5 10 15

Glu Cys

<210> 26

<211> 20

<212> PRT

<213> Streptococcus pyogenes

<400> 26

Lys Lys Thr Lys Asp Thr Lys Pro Val Val Lys Lys Glu Glu Arg Gln  
 1 5 10 15

Asn Val Asn Cys  
 20